We Claim:

1. Use of a phosphodiesterase antagonist to reduce insulin resistance in a mammalian patient suffering therefrom.

2. Use of a phosphodiesterase antagonist in the manufacture of a medicament useful in reducing insulin resistance in a patient suffering therefrom.

3. Use of a phosphodiesterase antagonist in the manufacture of a medicament useful in amplifying the effect of nitric oxide on skeletal muscle insulin-mediated glucose uptake in a mammalian patient.

4. Use of claim 1, 2 or 3 wherein the insulin resistance is hepatic insulin sensitizing substance-dependent insulin resistance ("HDIR").

5. Use of claim 1, 2, 3 or 4 wherein the antagonist is at least one of vinpocetine, zaprinast and dipyridamole, sildenafil, theophylline, aminophylline, isobutylmethyl xanthine anagrelide, tadalafil, dyphylline, vardenafil, cilostazol, caffeine, milrinone, amrinone pimobendan, cilostamide, enoximone, teroximone, vesmarinone, rolipram and R020-1724.

6. Use of claim 1, 2, 3 or 4 wherein the phosphodiesterase antagonist is an antagonist of at least one phosphodiesterase of subtype 3 and 5.

7. Use of claim 5 wherein the antagonist is zaprinast.

8. Use of claim 5 wherein the antagonist is at least one of vinpocetine, zaprinast and dipyridamole, sildenafil, theophylline, aminophylline, isobutylmethyl xanthine anagrelide, tadalafil, dyphylline, vardenafil, cilostazol and caffeine.

9. Use of any preceding claim wherein the patient is a human.

10. A pharmaceutical composition comprising a phosphodiesterase antagonist and at least one other drug used in the treatment of diabetes.

11. The pharmaceutical composition of claim 10 further including a pharmaceutically acceptable liver-targeting substance.

12. The composition of claim 10 or 11 wherein the antagonist is at least one of vinpocetine, zaprinast and dipyridamole, sildenafil, theophylline, aminophylline, isobutylmethyl xanthine anagrelide, tadalafil, dyphylline, vardenafil, cilostazol, caffeine, milrinone, amrinone pimobendan, cilostamide, enoximone, teroximone, vesmarinone, rolipram and R020-1724.

13. The composition of claim 12 wherein the antagonist is at least one of vinpocetine, zaprinast and dipyridamole, sildenafil, theophylline, aminophylline, isobutylmethyl xanthine anagrelide, tadalafil, dyphylline, vardenafil, cilostazol and caffeine.

14. The composition of claim 9 or 10 wherein the phosphodiesterase antagonist is an antagonist of at least one of phosphodiesterase of subtype 3 and 5.

15. The composition of claim 10, 11, 12, 13 or 14 wherein the other drug is at least one of insulin, insulin analogues, sulfonylurea agents, tolbutamide, acetohexamide, tolazamide, chlorpropamide, glyburide, glipizide, glimepiride, biguanide agents, metformin, alpha-glucosidase inhibitors, acarbose, miglitol, thiazolidinedione agents (insulin sensitizers), rosiglitazone, pioglitazone, troglitazone, meglitinide agents, repaglinide, cholinesterase inhibitors, donepezil, tacrine, edrophonium, demecarium, pyridostigmine, phospholine, metrifonate, neostigmine, galanthamine, zanapezil, cholinergic agonists, acetylcholine, methacholine, bethanechol, carbachol, pilocarpine hydrochloride, nitric oxide donors, products or processes to increase NO synthesis in the liver (increasing NO synthase activity), SIN-1, molsidamine, N-acetylcysteine, cysteine esters, L-2-oxothiazolidine-4-carboxolate (OTC),

gamma glutamylcystein and its ethyl ester, glutathione ethyl ester, glutathione isopropyl ester, lipoic acid, cysteine, cystine, methionine, S-adenosylmethionine, products or processes to reduce the rate of NO degradation in the liver, products or processes to provide exogenous NO or an exogenous carrier or precursor which is taken up and releases NO in the liver, antioxidants, vitamin E, vitamin C, 3-morpholinosyndnonimine, glutathione increasing compounds, N-acetylcysteine, cysteine esters, L-2-oxothiazolidine-4-carboxolate (OTC), gamma glutamylcystein and its ethyl ester, glutathione ethyl ester, glutathione isopropyl ester, lipoic acid, cysteine, cystine, methionine, and S-adenosylmethionine.

16. The composition of claim 11 wherein the liver-targeting substance is at least one of bile salts, albumin and liposomes.

17. A kit comprising:

a phosphodiesterase antagonist in a pharmaceutically acceptable carrier; and

instructions for the administration of the phosphodiesterase antagonist to reduce insulin resistance in a mammalian patient.

18. The kit of claim 17 further comprising means to administer the phosphodiesterase antagonist.

19. A method of reducing insulin resistance in a mammalian patient comprising administering a suitable phosphodiesterase antagonist.

20. The method of claim 19 wherein the insulin resistance is HISS-dependent insulin resistance.

21. A method of amplifying the effect of nitric oxide on skeletal muscle insulin sensitivity comprising administering a phosphodiesterase antagonist.

22. A method of increasing glucose uptake by skeletal muscle of a patient, comprising administering a phosphodiesterase antagonist.

23. The method of one of claims 19, 20, 21 or 22 wherein the antagonist is at least one of vinpocetine, zaprinast and dipyridamole, sildenafil, theophylline, aminophylline, isobutylmethyl xanthine anagrelide, tadalafil, dyphylline, vardenafil, cilostazol, caffeine, milrinone, amrinone pimobendan, cilostamide, enoximone, teroximone, vesmarinone, rolipram and R020-1724.

24. The method of claim 23 wherein the antagonist is at least one of vinpocetine, zaprinast and dipyridamole, sildenafil, theophylline, aminophylline, isobutylmethyl xanthine anagrelide, tadalafil, dyphylline, vardenafil, cilostazol and caffeine.

25. The method of any one of claims 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is an antagonist of at least one of phosphodiesterase of subtype 3 and 5.

26. The method of any preceding claim further comprising administering at least one other drug used in the treatment of diabetes.

27. The method of claim 26 wherein the other drug is at least one of insulin, insulin analogues, sulfonylurea agents, tolbutamide, acetohexamide, tolazamide, chlorpropamide, glyburide, glipizide, glimepiride, biguanide agents, metformin, alpha-glucosidase inhibitors, acarbose, miglitol, thiazolidinedione agents (insulin sensitizers), rosiglitazone, pioglitazone, troglitazone, meglitinide agents, repaglinide, cholinesterase inhibitors, donepezil, tacrine, edrophonium, demecarium, pyridostigmine, phospholine, metrifonate, neostigmine, galanthamine, zanapezil, cholinergic agonists, acetylcholine, methacholine, bethanechol, carbachol, pilocarpine hydrochloride, nitric oxide donors, products or processes to increase NO synthesis in the liver (increasing NO synthase activity), SIN-1, molsidamine, N-acetylcysteine, cysteine esters, L-2-oxothiazolidine-4-carboxolate (OTC), gamma glutamylcystein and its ethyl ester,

glutathione ethyl ester, glutathione isopropyl ester, lipoic acid, cysteine, cystine, methionine, S-adenosylmethionine, products or processes to reduce the rate of NO degradation in the liver, products or processes to provide exogenous NO or an exogenous carrier or precursor which is taken up and releases NO in the liver, antioxidants, vitamin E, vitamin C, 3-morpholinosyndnonimine, glutathione increasing compounds, N-acetylcysteine, cysteine esters, L-2-oxothiazolidine-4-carboxolate (OTC), gamma glutamylcystein and its ethyl ester, glutathione ethyl ester, glutathione isopropyl ester, lipoic acid, cysteine, cystine, methionine, and S-adenosylmethionine.

28. The method of any preceding claim wherein the phosphodiesterase antagonist is preferentially targeted to the liver.

29. The method of claim 28 wherein the phosphodiesterase antagonist is targeted to the liver using albumin.

30. The method of claim 28 wherein the phosphodiesterase antagonist is targeted to the liver using a plurality of liposomes.

31. The method of claim 28 wherein the phosphodiesterase antagonist is targeted to the liver using bile salts.

32. The method of claim 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is administered by intravenous administration.

33. The method of claim 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is administered by transdermal administration.

34. The method of claim 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is administered by oral administration.

35. The method of claim 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is administered by intra peritoneal administration.

36. The method of claim 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is administered by portal vein injection.

37. The method of claim 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is administered orally at a dose of between about 2 and 300 mg/kg body weight.

38. The method of claim 19, 20, 21, 22 or 23 wherein the phosphodiesterase antagonist is administered intravenously at a dose of between about 5 and 500 µg/kg body weight.

39. The method of any preceding claim wherein the patient suffers from at least one of: chronic liver disease, chronic hypertension, type II diabetes, fetal alcohol syndrome, gestational diabetes, obesity, age-related insulin resistance, and hepatic nerve damage.

40. The method of any preceding claim wherein the patient is a human.